

**PATENT CLAIMS**

1. A method for the manufacture of concrete pipes comprising an outer layer, said outer layer forming the pipe itself, as well as an inner layer of greater density in surface structure, said inner layer being supplied by an applicator in a mould comprising inner as well as outer mould parts, c h a r a c t e r i z e d in that the applicator is formed by an inner mould part or core (4) or by an applicator unit in direct connection with the core, said applicator supplying the inner layer during simultaneous or during immediately following vibration.
2. A method according to claim 1, c h a r a c t e r i z e d in that the inner layer is applied during movement of the inner mould part or core (4) in its longitudinal direction, said core (4) being formed with one or more supply openings (14) along the circumference of the core (4) at the upper end of the core (4) for the supply of a further material.
3. A method according to claim 1, c h a r a c t e r i z e d in that the inner layer is applied when the outer pipe (2) is formed in that the core (4) is rotated and a further material is applied through one or more supply openings (14), which essentially extend in the longitudinal direction of the core (4).
4. A method according to claim 1, c h a r a c t e r i z e d in that the inner layer is applied by an applicator in the form of a rotor (10) for the forming of a concrete pipe (2), in which rotor one or more supply openings (14) are provided in the part of the rotor (10) which faces away from the direction of travel of the rotor (10).
5. A method according to claims 1-4, c h a r a c t e r i z e d in that the inner layer is applied to a bottom ring (5) and/or a top ring (6) before said ring or rings are applied to the other mould parts.

6. A method according to claims 1-4, c h a r a c t e r i z e d in that the inner layer is applied to a bottom ring (5) and/or a top ring (6) when said ring or rings have been connected with the other mould parts and before the mould is filled with concrete (9).

7. A method according to claims 1-4, c h a r a c t e r i z e d in that the spigot end (7) of the pipe is provided with the inner layer in that a top ring or a profile ring (6) is lifted, the further material is filled over the spigot end (7) of the pipe (2), and then the profile ring (6) is lowered/pressed down over the spigot end (7) during simultaneous or during immediately following vibration.

8. A method according to claims 1-7, c h a r a c t e r i z e d in that the further material may be in the form of a paste, powder or liquid.

9. An apparatus for the manufacture of concrete pipes by the method according to claim 1 or 2, where the applicator is formed by a core (4) which is intended to be moved in its longitudinal direction into the outer form (3), an upper end of said core (4) being provided with one or more annular grooves (14) c h a r a c t e r i z e d in that a further material with a greater density is supplied through one or more annular grooves to form an inner layer of greater density in the pipe structure during vibration from a vibrator (12) placed inside the core (4).

10. An apparatus for the manufacture of concrete pipes by the method according to claim 1 or 2, where the applicator is formed by a core (4) which is intended to be moved in its longitudinal direction into the outer form (3), an upper end of said core (4) being provided with a plurality of nozzles or gaps arranged at a short distance from each other in one or more grooves (14) along the circumference of the core (4) , c h a r a c t e r i z e d c h a r a c t e r i z e d in that a further material with a greater density is supplied through said plurality of nozzles or gaps to form an inner layer of greater density in the pipe structure during vibration from a vibrator (12) placed inside the core (4).

11. An apparatus for the manufacture of concrete pipes by the method according to claim 1 or 3, characterized in that the applicator is formed by a core (4) which is intended to be rotated during forming or is rotated at completed forming, and that the core (4) is provided with one or more grooves (14), said grooves (14) being arranged such that they extend in the longitudinal direction of the core (4) in one or more rows.

12. An apparatus according to claim 11 for the manufacture of concrete pipes by the method according to claim 1 or 3, characterized in that the groove or grooves (14) extend in a straight line in the longitudinal direction of the core (4).

13. An apparatus according to claim 11 for the manufacture of concrete pipes by the method according to claim 1 or 3, characterized in that the groove or grooves (14) extend in a form of a spiral along the surface of the core (4) from one end of the core toward or to the other end of the core (4).

14. An apparatus for the manufacture of concrete pipes by the method according to claim 1 or 4, wherein the rotor (10) is arranged on the front of the core (4) relative to the direction of travel of the core (4), and that the rotor (10) is provided with supply means (14) characterized in that the further material is supplied to the inner surface of the pipe (2) through the supply means (14) during vibration from a vibrator (12) placed inside the core.

15. An apparatus according to claim 14 for the manufacture of concrete pipes by the method according to claim 1 or 4, characterized in that the supply means (14) provided on the rotor (10) are configured as nozzles and/or gaps.